

### AMENDMENTS

Please amend the claims as indicated below. A complete listing of the claims, including their current status, is set forth below.

1. (currently amended) A method for detecting a background intensity gradient within a microarray data set, the method comprising:  
computing convergence metrics for features within the microarray data set; and when the convergence metrics computed for a number of features are larger than a threshold value, determining that the microarray data set exhibits a background intensity gradient, wherein a pattern of distribution of at least some of said features with convergence metrics larger than said threshold value indicates the location and direction of said background intensity gradient; and  
outputting a numerical indication of the determined background intensity gradient to at least one of: a user, a display, a memory, or a computer.
2. (previously presented) The method of claim 1 wherein a convergence metric is computed for each feature in the microarray data set.
3. (previously presented) The method of claim 1 wherein a convergence metric is computed for a selected number of features in the microarray data set.
4. (previously presented) The method of claim 1 wherein the convergence metric computed for each feature is a convergence metric related to a difference between mean and median pixel intensities within background regions of increasing size containing the feature.
5. (previously presented) The method of claim 4 wherein the convergence metric computed for each feature is proportional to a size of a background region containing the feature with a greatest difference between the mean and median pixel intensity for pixels within the background region.

6. (previously presented) The method of claim 4 wherein the convergence metric computed for a feature is proportional to a size of a background region containing the feature with a greatest difference between the mean and median pixel intensity for pixels within the background region, when a difference between a largest difference between mean and median pixel intensity for pixels within a background region and a smallest difference between mean and median pixel intensity for pixels within a background region is greater than a threshold value, and otherwise the convergence metric computed for a feature is a size of the feature.

7. (previously presented) The method of claim 4 wherein the convergence metric computed for each feature is proportional to a size of a background region containing the feature with a difference between the mean and median pixel intensity for pixels within the background region near to, but not equal to, the size of a background region with a greatest difference between the mean and median pixel intensity for pixels within the background region.

8. (original) The method of claim 4 wherein features are disk shaped, and the background regions of increasing size are annuli circumscribing the feature with increasing outer radii.

9. (previously presented) A method comprising forwarding, to a remote location an indication obtained by a method of claim 1 as to whether or not a microarray data set contains a background intensity gradient.

10. (previously presented) A method comprising receiving from a remote location an indication obtained by a method of claim 1 as to whether or not a microarray data set contains a background intensity gradient.

11. (original) A computer program implementing the method of claim 1 stored in a computer-readable medium.

12. (previously presented) A method for characterizing background intensity gradients within a microarray data set, the method comprising:

computing convergence metrics for features within the microarray data set; and  
when the convergence metrics computed for a number of features are larger than a  
threshold value,  
    grouping features with computed convergence metrics by position; and  
    characterizing a background intensity gradient corresponding to each group of  
features by an area of the microarray surface corresponding to the group and by a  
position of the group on the surface of the microarray; and  
outputting a numerical indication of the characterized background intensity gradients  
to at least one of: a user, a display, a memory, or a computer.

13. (previously presented) The method of claim 12 further including characterizing a  
background intensity gradient corresponding to a group of features by an average computed  
convergence metric for the features of the group.

14. (previously presented) The method of claim 12 wherein a convergence metric is  
computed for each feature in the microarray data set.

15. (previously presented) The method of claim 12 wherein a convergence metric is  
computed for a selected number of features in the microarray data set.

16. (previously presented) The method of claim 12 wherein the convergence metric  
computed for each feature is a convergence metric related to a difference between mean and  
median pixel intensities within background regions of increasing size containing the feature.

17. (original) The method of claim 16 wherein features are disk shaped, and the background  
regions of increasing size are annuli circumscribing the feature with increasing outer radii.

18. (original) The method of claim 12 further comprising forwarding, to a remote location a  
characterization of a background intensity gradient within the microarray data set.

19. (original) A computer program implementing the method of claim 12 stored in a

computer-readable medium.

20. (previously presented) A microarray data set analysis system comprising:

- a stored image of a microarray; and
- a processing entity that
  - computes a convergence metric for features within the image of the microarray; and
  - when the convergence metrics computed for a number of features are larger than a threshold value,
    - determines that a background intensity gradient is present in the image of the microarray;
    - groups features with computed convergence metrics larger than a threshold value by position; and
    - characterizes a background intensity gradient corresponding to each group of features; and
    - outputs a numerical indication of the characterized background intensity gradient to at least one of: a user, a display, a memory, or a computer..

21. (previously presented) The microarray data set analysis system of claim 20 wherein the processing entity characterizes the background intensity gradient corresponding to each group of features by one or more of:

- an area of the microarray surface corresponding to the group of features;
- a position of the group of features on the surface of the microarray;
- and an average computed convergence metric for the group of features.

22. (previously presented) The microarray data set analysis system of claim 20 wherein a convergence metric is computed for each feature in the image of the microarray.

23. (previously presented) The microarray data set analysis system of claim 20 wherein a convergence metric is computed for a selected number of features in the image of the microarray.

24. (previously presented) The microarray data set analysis system of claim 20 wherein the convergence metric computed for each feature is a convergence metric related to a difference between mean and median pixel intensities within background regions of increasing size containing the feature.

25. (original) The microarray data set analysis system of claim 24 wherein features are disk shaped, and the background regions of increasing size are annuli circumscribing the feature with increasing outer radii.

26. (new) A method for detecting a background intensity gradient within a microarray data set, the method comprising:  
computing convergence metrics for features within the microarray data set; and  
when the convergence metrics computed for a number of features are larger than a threshold value, determining that the microarray data set exhibits a background intensity gradient, wherein a pattern of distribution of at least some of said features with convergence metrics larger than said threshold value indicate the location and direction of said background intensity gradient.

27. (new) A method for detecting a background intensity gradient within a microarray data set, the method comprising:  
computing convergence metrics for features within the microarray data set;  
detecting the presence of features with convergence metrics larger than a threshold value, wherein the presence of features with convergence metrics larger than said threshold value is indicative of the presence of a background intensity gradient within said microarray data set.